

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Previously presented) A method for managing heap memory in a
2 multitasking system, comprising:
 - 3 reserving a guaranteed amount of heap memory for a task from a common
4 heap in the multitasking system, wherein the heap memory reserved for the task is
5 separate from heap memory reserved for all other tasks in the common heap of the
6 multitasking system;
 - 7 receiving a request from the task to allocate heap memory for a new
8 object; and
 - 9 if heap memory is available in the guaranteed amount of heap memory for
10 the task, allocating heap memory for the new object from the guaranteed amount
11 of heap memory;
 - 12 if heap memory is not available in the guaranteed amount of heap memory,
13 checking if surplus heap memory is available in the common heap;
 - 14 if surplus heap memory is available, reserving an additional amount of
15 heap memory to the task from the common heap and allocating heap memory for
16 the new object from the additional amount of heap memory, whereby allocating
17 heap memory for the new object from the additional amount of heap memory
18 delays garbage collection; and
 - 19 if surplus heap memory is not available, performing garbage collection on
20 the heap memory reserved for the task, wherein the task space is separate from all
21 other task spaces;

22 wherein other tasks continue normal execution without interruption due to
23 garbage collection.

1 2. (Previously presented) The method of claim 1, wherein if surplus heap
2 memory is not available in the common heap in addition to heap memory
3 allocated to tasks, the method further comprises
4 performing garbage collection on heap memory to reclaim unused reserved
5 heap memory, and
6 allocating heap memory for the new object from reclaimed surplus heap
7 memory.

1 3. (Previously presented) The method of claim 1, wherein reserving the
2 guaranteed amount of heap memory from the common heap includes:
3 determining if there is sufficient heap memory available in the common
4 heap; and
5 if not, performing garbage collection to reclaim allocated surplus heap
6 memory, and
7 reserving heap memory for the task from reclaimed heap memory.

1 4. (Previously presented) The method of claim 1, wherein heap memory in
2 the common heap is managed using a generational garbage collector.

1 5. (Original) The method of claim 4, wherein a plurality of tasks share an
2 old generation of the generational garbage collector.

1 6. (Original) The method of claim 5, wherein each task of the plurality of
2 tasks has a new generation of the generational garbage collector belonging to the
3 task.

1 7. (Original) The method of claim 4, wherein the generational garbage
2 collector is a copying garbage collector.

1 8. (Currently amended) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a
3 method for managing heap memory in a multitasking system, wherein the
4 computer-readable storage medium includes magnetic and optical storage devices,
5 disk drives, magnetic tape, CDs (compact discs), and DVDs (digital versatile discs
6 or digital video discs), the method comprising the steps of:
7 reserving a guaranteed amount of heap memory for a task from a common
8 heap in the multitasking system, wherein the heap memory reserved for the task is
9 separate from heap memory reserved for all other tasks in the common heap of the
10 multitasking system;
11 receiving a request from the task to allocate heap memory for a new
12 object; and
13 if heap memory is available in the guaranteed amount of heap memory for
14 the task, allocating heap memory for the new object from the guaranteed amount
15 of heap memory;
16 if heap memory is not available in the guaranteed amount of heap memory,
17 checking if surplus heap memory is available in the common heap;
18 if surplus heap memory is available, reserving an additional amount of
19 heap memory to the task from the common heap and allocating heap memory for
20 the new object from the additional amount of heap memory, whereby allocating
21 heap memory for the new object from the additional amount of heap memory
22 delays garbage collection; and
23 if surplus heap memory is not available, performing garbage collection on
24 the heap memory reserved for the task, wherein the task space is separate from all
25 other task spaces;

26 wherein other tasks continue normal execution without interruption due to
27 garbage collection.

1 9. (Previously presented) The computer-readable storage medium of claim
2 8, wherein if surplus heap memory is not available in the common heap in
3 addition to heap memory allocated to tasks, the method further comprises:
4 performing garbage collection on heap memory to reclaim unused reserved
5 heap memory, and
6 allocating heap memory for the new object from reclaimed surplus heap
7 memory.

1 10. (Previously presented) The computer-readable storage medium of
2 claim 8, wherein reserving the guaranteed amount of heap memory from the
3 common heap includes:
4 determining if there is sufficient heap memory available in the common
5 heap; and
6 if not, performing garbage collection to reclaim allocated surplus heap
7 memory, and
8 reserving heap memory for the task from reclaimed heap memory.

1 11. (Previously presented) The computer-readable storage medium of
2 claim 8, wherein heap memory in the common heap is managed using a
3 generational garbage collector.

1 12. (Original) The computer-readable storage medium of claim 11,
2 wherein a plurality of tasks share an old generation of the generational garbage
3 collector.

1 13. (Original) The computer-readable storage medium of claim 12,
2 wherein each task of the plurality of tasks has a new generation of the generational
3 garbage collector belonging to the task.

1 14. (Original) The computer-readable storage medium of claim 11,
2 wherein the generational garbage collector is a copying garbage collector.

1 15. (Currently amended) An apparatus that facilitates managing computer
2 heap memory in a multitasking system, comprising:
3 a computing device including a multitasking virtual machine;
4 a reserving mechanism within the multitasking virtual machine that is
5 configured to reserve a guaranteed amount of physical heap memory for a task
6 from a new generation space within a common heap in the multitasking system,
7 wherein the heap memory reserved for the task is separate from heap memory
8 reserved for all other tasks in the common heap of the multitasking system;
9 a receiving mechanism within the multitasking virtual machine that is
10 configured to receive a request from the task to allocate heap memory for a new
11 object;
12 the reserving mechanism that is further configured to reserve an additional
13 amount of heap memory to the task from the common heap;
14 an allocating mechanism within the multitasking virtual machine that is
15 configured to allocate heap memory for the new object from the guaranteed
16 amount of heap memory;
17 a reserving mechanism configured to reserve an additional amount of heap
18 memory to the task from surplus memory within the common heap, if heap
19 memory is not available-~~available~~ in the guaranteed amount of heap memory;
20 wherein the allocating mechanism is further configured to allocate heap
21 memory for the new object from the additional amount of heap memory, whereby

22 allocating heap memory for the new object from the additional amount of heap
23 memory delays garbage collection; and
24 a garbage collection mechanism configured to perform garbage collection
25 on the heap memory reserved for the task, wherein the task space is separate from
26 all other task spaces;
27 wherein other tasks continue normal execution without interruption due to
28 garbage collection.

1 16. (Previously presented) The apparatus of claim 15, further comprising:
2 a garbage collecting mechanism that is configured to perform a garbage
3 collection on heap memory to reclaim unused reserved heap memory, and
4 the allocating mechanism that is further configured to allocate heap
5 memory for the new object from reclaimed heap memory

1 17. (Previously presented) The apparatus of claim 15, further comprising:
2 a determining mechanism that is configured to determine if there is
3 sufficient heap memory available in the common heap; and
4 a garbage collection mechanism that is configured to perform a garbage
5 collection to reclaim allocated surplus heap memory, and
6 the reserving mechanism that is further configured to reserve heap memory
7 for the task from reclaimed heap memory.

1 18. (Original) The apparatus of claim 15, further comprising a generational
2 garbage collector.

1 19. (Original) The apparatus of claim 18, wherein a plurality of tasks share
2 an old generation of the generational garbage collector.

1 20. (Original) The apparatus of claim 19, wherein each task of the plurality
2 of tasks has a new generation of the generational garbage collector belonging to
3 the task.

1 21. (Original) The apparatus of claim 18, wherein the generational garbage
2 collector is a copying garbage collector.